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ABSTRACT

The design, procedure, and results of research conducted for three years in the Verbal Interaction Project are discussed. The major hypothesis tested was that the general and verbal intelligence of low-income subjects exposed to stimulation of verbal interaction in mother-child dyads would rise significantly. A second hypothesis tested was that such a rise would be greater in two-year-old than in three-year-old children. In each of the three years, there was confirmation of the major hypothesis; however, the second hypothesis was not supported. The close tie between language and cognition was demonstrated. Program children made and retained significantly higher gains than did children in contrast groups. In its current version, the Mother-Child Home Program is a home-based, mother and family involving, two-year method (seven months each year), utilizing nonprofessional women of varying income and education as volunteer or paid interveners called "Toy Demonstrators." This method is used to stimulate mother-child verbal interaction around gifts of 11 toys and 12 books, in semi-weekly, half-hour home visits. Results show that the Mother-Child Home Program was cognitively effective with 98 low-income preschoolers, most of whom were Negroes. Follow-up results with 41 subjects, 20 months after pretesting showed on IQ gain retention of 15.9 points. (DB)

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FINAL REPORT TO CHILDREN'S BUREAU,

OFFICE OF CHILD DEVELOPMENT

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Child Welfare Research and Demonstration Project R-300

VERBAL INTERACTION PROJECT:

Aiding Cognitive Growth in Disadvantaged Preschoolers through the Mother-Child Home Program

July 1, 1967 - August 31, 1970

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FINAL REPORT TO CHILDREN'S BUREAU, OFFICE OF CHILD DEVELOPMENT

ON

VERBAL INTERACTION PROJECT, CWRD PROJECT R-300, July 1, 1967 - August 31, 1970

I. INTRODUCTION

Within a broad, interdisciplinary, empirical-theoretical framework encompassing studies in anthropology, sociology, psychology, psycholinguistics, and philosophy, the Verbal Interaction Project launched a full-scale study of its home-based, preschool cognitive intervention effort, the Mother-Child Home Program in July, 1967, funded by Children's Bureau, of the Department of Health, Education, and Welfare. (See Appendix A for bibliography compiled in the early years of the research.) At the time of the pilot study in 1965-1966, the idea of a homebound, mother-involving program for the cognitive enrichment of low-income toddlers was novel to developmental psychological research although based on an idea as old as the family. The literature, except for Irwin's now classic work (1960) was barren of descriptions of such studies and remained so for a year or so. Actually, a similar program was already under investigation in Washington, D.C. (Schaefer, 1969), and others either began simultaneously with the Verbal Interaction Project or soon shifted emphasis from being adjunctive to nursery school programs to being ends in themselves. Home based cognitive intervention and/or "involvement" of mothers as cognitive socializers were in the air in the mid-sixties.

The problem which brought the Verbal Interaction Project into being was the same one which gave rise to a proliferation of preschool educational programs in more conventional nursery school settings, including the vast network called Headstart. This problem was the inadequate utilization of

public school education by low-income children because (it was felt) of dysfunctional preschool preparation, with eventual blocking of their road to upward mobility in this technological society. It was one of the Verbal Interaction Project's assumptions that preschool cognitive enrichment for low-income preschoolers should occur with early speech development and should be embedded in the child's relationships with beloved family figures, especially the mother -- as it probably actually did occur in middle-income families, without conscious planning, to form what Strodtbeck called the "hidden curriculum" of the middle class home (Strodtbeck, 1957). Family verbal interaction seemed the chief ingredient of this curriculum, and the Verbal Interaction Project's research hypothesis was that low-income two and three year olds' exposure to home-based stimulation of increased verbal interaction with their mothers around toys and books would also increase the IQ's of the children -- the measure of their cognitive growth. The cognitive enrichment program devised to do this was called the Mother-Child Home Program. It was essentially an attempt to install in the lives of low-income preschoolers not simply a variable of "verbal interaction" in isolation but to build it into the very fabric of their family experience, as it is integrated into the lives of middle-income children.

II. DESIGN AND METHOD OF PROCEDURE, 1967-1970

The three years of the Verbal Interaction Project's research were used to test by a "before-after" experimental design the cognitive effectiveness of the Mother-Child Home Program, using minor variations in subjects, interveners, method and reinforcement, in the direction of making the Program eventually "exportable", should research results warrant this.* The Program has remained, however, basically as outlined in our original proposal (1966) and as described in detail in Progress Reports to Children's Bureau (1968a, 1968b). Major changes from the proposal were: an expansion of the Program to two years instead of one; admission of children at the age of two instead of at both two and three years; a reduction of the number of VISM assigned each year from a proposed 36 to an actual 23; and a change in subject's entrance age from two and four years to two and three years in 1967-1968. In its current refined version, the Mother-Child Home Program is a home-based, mother and family involving, two year method (seven months within each year), utilizing non-professional women of varying income and education as volunteer or paid interveners called "Toy Demonstrators" to stimulate mother-child verbal interaction around gifts of 11 toys and 12 books, in semi-weekly, half hour home visits.

In each of the three years there has been confirmation of the major hypothesis stated in the original Proposal to Children's Bureau, that the general and verbal intelligence of low-income subjects exposed to stimulation of verbal interaction in mother-child dyads would rise significantly. A second hypothesis, that such a rise would be greater in two year old than in three year old children, was not supported.

In the first year of research (July 1967 to June 1968) the variable of "stimulation of verbal interaction" was operationalized, and the cognitive effectiveness of one year of the Mother-Child Home Program at subjects' ages two or three years was demonstrated, with professional social workers as Toy Demonstrators (interveners). The mean Stanford-Binet IQ gain for 33 Experimental Group children was 17 points; their Peabody Picture Vocabulary Test IQ gain was 12 points. As shown in Table 1, both gains were significantly above those of two Comparison Groups of children, one of which was a "placebo" ($Comparison_1$) Group of 9 children to control for a possible Hawthorne effect resulting from visits by a kindly adult figure, with the other group ($Comparison_2$) of 11 children receiving no intervention. The very low IQ gain,

*See Goldberg (1966) for a penetrating exposition of the methodological issues involved in planning research with disadvantaged children.

TABLE 1 : VERBAL INTERACTION PROJECT

INTELLIGENCE TEST MEANS, EXPERIMENTAL (E), COMPARISON$_1$ (C_1), AND COMPARISON$_2$ (C_2) GROUPS, 19 7-1968, FIRST RESEARCH YEAR

Test	(Treated) E Group			(Placebo) C_1 Group			(Untreated) C_2 Group			Difference E and C_1 Groups		Difference E and C_2 Groups	
	N	Mean	S.D.	N	Mean	S.D.	N	Mean	S.D.	t[a]	Signif-icance	t	Signif-icance
Pretest (Pre-intervention)													
Children -- C or SB[b]	33	84.9	10.5	9	87.4	11.0	11	92.0	9.7	.62	n.s.	1.92	n.s.
Children -- PPVT[c]	29	76.8	7.4	9	82.6	8.0	10	84.1	12.9	1.93	n.s.	2.12	$p < .05$
Mothers -- PPVT	26	82.5	16.4	9	86.0	15.2	10	87.8	13.9	.55	n.s.	.88	n.s.
Post-Test (Post-intervention)													
Children -- C or SB	33	101.9	14.7	9	88.4	9.5	11	94.0	8.8	2.55	$p < .05$	1.66	n.s.
Children -- PPVT	29	89.0	12.6	9	78.6	12.3	10	88.8	13.0	2.13	$p < .05$	.04	n.s.
Mothers -- PPVT	26	84.2	13.6	9	82.8	9.3	10	87.5	14.8	.29	n.s.	.61	n.s.
Change (8 months, Pre-Post)													
Children -- C or SB	33	+17.0	10.6	9	+1.0	9.0	11	+2.0	9.3	4.03	$p < .001$	4.08	$p < .001$
Children -- PPVT	29	+12.2	12.3	9	-4.0	9.6	10	+4.7	16.3	3.51	$p < .01$	1.48	n.s.
Mothers -- PPVT	26	+1.8	8.7	9	-3.2	11.8	10	- .3	7.4	1.3	n.s.	.65	n.s.

[a] Two-tailed test.

[b] Cattell or Stanford-Binet.

[c] Peabody Picture Vocabulary Test.

or loss, of seven Experimental subjects was found to be significantly related to 17 subcategories of their Home Session behavior listing in Table 2.

The Second Year of research (July 1968-June 1969), with 35 new subjects (including 8 former $Comparison_1$ subjects), again confirmed the short-term cognitive effectiveness of the Program, this time with 18 non-professional interveners acting as Toy Demonstrators, trained in an eight session Workshop and supervised weekly by the social workers. The elaborate operationalization of the variable "stimulation of verbal interaction " in the First Year (Appendix B) was translated into simplified instructions to the Toy Demonstrator (Examples, Appendix C) which became the core of the "curriculum" contained in the "Toy Demonstrators VISIT Handbook".

The Experimental subjects achieved posttest Stanford-Binet and Peabody IQ's which were closely similar to the posttest IQ's of subjects in the first year of research, but lower general cognitive and verbal gains, since the subjects started the intervention with generally higher IQs than in the first year.

Thus, the First Year established the short term cognitive effectiveness of the Mother-Child Home Program; and the Second Year repeated this finding and demonstrated its practicability, including relative low cost. Also in the Second Year, trends resulting from the field testing of minimal reinforcement of First Year cognitive gains indicated the advisability of exposing the subjects to two full years of the Program (children with minimal reinforcement demonstrated some additional gains on follow-up; but mothers faithful to weekly or semi-weekly appointments tended to forget Home Session appointments when they were less frequent, in the minimal reinforcement program).

Therefore, 19 (self-screened) Second Year new subjects were retained in the Third Year (July 1969-June 1970) for what was called "Program II". Thirty-four non-professional aides continued or were enrolled as Toy Demonstrators, receiving the same training and supervision as in the Second Research Year. A small new $Comparison_3$ Group for measuring the effect of "VISM only" was begun in the Third Year. Also, half of all subjects were recruited outside of Housing Projects. Finally, in the Third Year, a Follow-up Study of former subjects was begun, with the testing and interviewing of 41 former Experimental Group subjects and 17 former $Comparison_2$ Group subjects. Testing indicated significant gain retention for the Experimental Group two and a half years after the beginning of the intervention program, and no change in the cognitive status of the $Comparison_2$ (untreated) group.

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TABLE 2: VERBAL INTERACTION PROJECT

SIGNIFICANTLY DIFFERING VERBALLY RELATED BEHAVIOR OF LOW AND HIGH GAINERS*

Verbally Related Behavior	Mean Low Gainers (N=7) Mean f	Mean High Gainers (N=26) Mean f	Difference High & Low Gainers t	p**
Questions	5.57	15.96	2.67	.01
Answers	14.57	24.46	3.01	.01
Initiates conversation	5.71	15.58	2.35	.05
Converses	4.51	14.23	1.89	.05
Verbalizes to book	7.29	11.85	2.72	.01
Associates to book	2.43	8.08	2.87	.0
Plays with VISM	12.86	22.69	3.00	.01
Cooperates	14.71	25.46	3.27	.01
Solitary play	13.86	6.58	3.45	.01
Helps	4.57	14.65	2.48	.01
Initiates activities	7.57	17.27	2.47	.01
Complies	14.43	22.35	2.84	.01
Verbalizes relationships	3.29	8.42	2.04	.05
Shifts attention appropriately	18.86	25.96	2.18	.05
Demonstrates joy	7.57	14.81	1.97	.05
Demonstrates pleasure	18.14	25.23	2.35	.05
Verbalizes pleasure	3.00	6.69	1.79	.05

* On Stanford-Binet Intelligence Scale. "Low Gain" = IQ change score of -7 to 8. "High Gain" = IQ change score of 9 to 33.

** One tailed test.

The Third Year also saw the beginning of expansion of the Experimental subject group to children whose home language was Spanish (5 dyads), and in the interveners' group to one paid Toy Demonstrator who had no previous knowledge of the program. By the end of this year, also, materials in the curriculum for the Mother-Child Home Program were almost complete and ready for dissemination. In preparation for the latter, the groundwork was laid for investigating methods of dissemination in a Fourth Research Year, by running a Training Institute attended by representatives of 5 agencies planning replication of the Mother-Child Home Program, with a promise of consultation, materials and as-needed assistance from the Verbal Interaction Project's staff in return for feedback of data from the pre and posttest intelligence testing of their own subjects before and after a year's administration of the program.

At the time of the Verbal Interaction Project's pilot investigation, starting in 1965, no other such home based cognitive intervention program had been reported in the literature. In contrast, several are now well known. It is gratifying to share the philosophy and goals common to all such home based cognitive intervention programs. The Mother-Child Home Program appears to have made its own unique contributions in methodology and theory:

1. <u>Operationalization of modeling the "verbal interaction" to be stimulated in mother-child dyads (major aspect of independent variables for the Verbal Interaction Project)</u>.

The list of Verbal Interaction Stimulus Intervention techniques contained in the "Toy Demonstrator's VISIT Handbook" and taught at weekly supervisory conferences, operationalized the means of modeling the "verbal interaction in the family" which a large number of investigators agree is vital to the child's cognitive growth. The techniques were derived from the theoretical formulations of many authors, but Jerome Bruner's concept of instrumental conceptualism" was the major theoretical base, translated into the idea that symbolic organization begins for the 2 and 3 year old child through the interaction of his language and his experience. "Experience" was given highly significant meaning through play with the child's mother focused around attractive materials. "Language" was developed through the verbal interaction techniques, with labeling and categoriality the key language features in bringing the child from the enactive to the iconic, and into beginning the symbolic mode of representing reality (Bruner's model for cognitive growth).

2. Involvement of the mother as the ultimate agent of intervention for her own child.

The Program utilized the mother's unique relationship with her own child, and her available representational and verbal skills, to lay the groundwork for the child's (probable) eventual surpassing of her own cognitive level. Adults in the low income groups may have limited symbolic representational skills but are competent at the enactive and iconic levels, with skills adequate for the cognitive and affective needs of the preschool child. Research results in the First Year of research demonstrated that mothers of modest or even very low verbal intelligence are able to work effectively with the Program in their children's behalf (see results of testing of mother's verbal intelligence in Table 1). These concepts are implicit in any program intending to "involve" the mothers in her child's early home education. But the approach and techniques for such involvement of the mother were given especially meaningful and person-respecting dimensions through the employment of family-oriented professionals as Interveners in the First Year and as supervisors of Interveners in the following years in a family agency setting primarily concerned with a focus on the needs and strengths of mothers interacting with their children in their homes.

3. Motivation through a non-didactic approach, respect for families, and permanent VISM.

The mother's educational aspirations for her child, the Program's non-didactic methods, all staff's explicit and implicit respect for the participants' privacy and life styles, the permanent assignment (see below) of attractive VISM (Verbal Interaction Stimulus Materials), all contributed to the acceptability of the Program by participants and community.

4. Interveners and auspices.

Interveners of widely varied education, age, and SES background were effective Toy Demonstrators under the supervision of professional social workers who were themselves interveners during the First Year. Paid Toy Demonstrators (usually former mother-participants) had low incomes and no higher than high school educations; volunteer Toy Demonstrators were typically college educated and of middle or high income. Most were available through the host agency, the Family Service Association of Nassau County, Inc.

5. Supervision of Interveners by family-oriented professionals.

Social workers were found to provide functional supervision of Toy Demonstrators because of ability to transmit empathy with the affective needs and strengths of mothers as well as of children. They tended to focus on mothers' ego strengths rather than on their pathology and were able, within one year, to learn the teaching skills needed to demonstrate the verbal interaction techniques both directly, in their own work with mother-child dyads, and indirectly, through supervision of non-professional interveners. The training of interveners in sensitivity to the needs of mothers is of special importance because of the low self esteem and requirements for ego support of many low income mothers.

6. Permanent assignment of Verbal Interaction Stimulus Materials (VISM) consisting of 12 books and 11 toys for each of the two Program years, Program I and Program II.

The VISM were permanently assigned (for continued reinforcement, for motivational reasons, and for links to future school values and content); were chosen by multiple, explicit criteria based on theory empirically explored in the pilot project and First Research Year; and invited cognitive socialization of the child by others besides the mother in the family and home. They can be chosen, using developed criteria, for maximum interest to specific ethnic subgroups and are commercially available at a cost of approximately $100 per child per year.

7. Provision for "flexibility within simple structure" in curriculum and in intervener activity.

The verbal interaction techniques were spelled out for each VISM, with VISM guide sheets (examples, Appendix C) contained cumulatively in a Toy Demonstrator's VISIT Handbook. VISIT was the acronym for "Verbal Interaction Stimulation Intervention Techniques." Interveners could be ingenious and original in departing from the particular techniques suggested for each VISM: but they were instructed to utilize the curriculum of general categories of verbally encouraging techniques listed on every guide sheet.

Interveners had definite, regular, simple responsibilities and were guided within an uncomplicated though planned structure of group and individual supervision. But their creative autonomy within this structure was explicitly and implicitly encouraged. As a result, interveners who were widely separated in educational sophistication and general life experience were able to work in harmony with the Program and with each other.

8. Practicality and side benefits of procedure.

The program represented a relatively low expenditure of time, effort, and money, consisting of a maximum of 46 semi-weekly, half hour Home Sessions spread over 7 months of each of two years, at a cost of approximately $400 per child, including the gifts of toys and books (when separated from the Verbal Interaction Project research budget). The concept of "sequence ordering" sometimes inadequately available in low income homes was conveyed through the initial gift of a toy chest to each new subject and through the modeling of dependability and reliability by the Toy Demonstrators. The Mother-Child Home Program can be described and taught in detail to other institutions, can utilize adult female interveners of a wide range of education and income, and has supervisory and administrative procedures and instruments ready for dissemination to such institutions. In other words, the program is "exportable", even to the testing of methods of dissemination.

The major activities of the Verbal Interaction Project between its full scale inception in July 1967 and the end of support by Children's Bureau on August 31, 1970, may be summarized as follows:

1. 1967-1970: Investigation of the short-term cognitive effects of the innovative Mother-Child Home Program on low-income preschoolers.

2. 1968-1970: Addition of the Glen Cove Program Center to the Freeport Program Center.

3. 1967-1970: Refinement of the Mother-Child Home Program.

4. 1968-1970: Development of methods for training and supervision of interveners (Toy Demonstrators).

5. 1970: Follow-up Study of experimental and comparison First Year subjects, to evaluate the long-range effects of the intervention (cognitive gain retention).

6. 1967-1970: Development and field testing of new data gathering instruments.

7. 1967-1970: Preparation for possible local and national dissemination of the Mother-Child Home Program.

8. 1969-1970: Study of cognitive effects of "VISM only" on 12 $Comparison_3$ Subjects.

The data resulting from three years of these activities are so abundant that it is not possible within the necessarily narrow space limits of this report to do more than present them in table form and comment on the highlights of each table.* Tables and comments will be found under appropriate headings, followed by a summary of major findings, some interpretation of their meaning, and suggestions for the future of the Verbal Interaction Project.

*Appreciation is expressed to the Computer Center of Adelphi University, Garden City, New York, and particularly to its Director, Dr. Mary Louise Buchanan, for patience and attention to the data needs of this project which went far beyond the call of duty.

III. SAMPLE, 1967 - 1970

Table 3: Background Characteristics of 1967-1970 Experimental Group (Subjects in Mother-Child Home Program)

Table 4: Background Characteristics of Three Comparison Groups, 1967-1970 (C_1: Visitor only; C_2: Untreated; C_3 VISM only)

Table 5: Background Characteristics of Grandparents of 1967-1970 Experimental Groups

Table 6: Intervening Variables During Period of Mother-Child Home Program, Experimental Group

With the sample population all low-income two year olds and their mothers, a representative sample of subjects in the Experimental and $Comparison_1$ (Visitor only) and $Comparison_2$ (Untreated) Groups seemed reasonably assured by inviting to be included in each group the total two year old population of each of the three widely separated (by 18 miles) low income public housing projects. (These were in the Long Island communities of Freeport, Glen Cove and Manhasset.) For human relation reasons, randomization was by housing project groups, rather than by subject. By this method, 34 dyads, or almost 100% of the two and three year olds in the Freeport Housing Project, comprised the Experimental Group in the first year (with only 33 included in posttest data because of the attrition of one child at posttest). But self screening of mothers in the other two housing projects resulted in only partial enrollment of the dyads eligible for the two Comparison Groups, so that there were eleven in the (Glen Cove) $Comparison_1$ Group (reduced to 9 because two were Spanish speaking), and 19 in the $Comparison_2$ Group (Manhasset). Attrition, and the untestability of one child, in the C_2 Group, decreased it still further at posttest to a N of 11 (which increased to 16 at the first Follow-up Study 1). Twelve dyads in the $Comparison_3$ Group (VISM only), formed in 1969-1970, were referred from outside of housing projects by Public Health Nurses, from low income families with two year olds in their case load. Half of the Experimental subjects in 1969-1970 were also recruited from outside of housing projects, through community referrals.

The only eligibility criteria for all subjects in the sample were that mothers had to be financially eligible for low income housing and with an education not higher than high school graduation.

Sampling - equivalence questions were thus raised but seemed almost answered by data contained in Tables 3 and 4 on which the most salient background characteristics of all groups were demonstrated to be essentially similar and typical for low income groups, as well as stable for the E group from year to year. Yet, the slightly higher education of parents in the C_2 group is also shown in Table 4. Since the samples were thus not exactly equated, the intended experimental design might be better labeled "quasi-experimental", a term used by Campbell and Erlebacher (1970) as they described the common sampling problems encountered in this type of research problems confirmed by Evans and Schiller (1970).

The education, occupation, and home residence of the grandparents in each group, were similar, in that they indicated their generally low SES and frequent rather high proportion of grandfathers' absence from parents homes (See Table 5).

An indication of sample - stability is yielded by a comparison among the Experimental groups of children entering the program each year in their exposure to "major life events" intervening in the experiences of the subject groups during their first year of enrollment in the research project. Although some difficulties are demonstrated in Table 6, (family membership, child's over night absence from home, hospitalization of family members), their magnitude seems counter-balanced by the similarities among the three groups.

TABLE 3: VERBAL INTERACTION PROJECT

BACKGROUND CHARACTERISTICS OF 1967-1970 EXPERIMENTAL GROUP (Subjects in Mother-Child Home Program)

Background Characteristics	Bands 1 & 2 (N=33) (2 & 3 yr Olds) 1967-1968 N	%	Mean	Range	Band 3 (N=27)* (2 yr Olds) 1968-1969 N	%	Mean	S.D.	Band 4 (N=30) (2 yr Olds) 1969-1970 N	%	Mean	S.D.
HOUSING TYPE												
Housing Project	33	100	---	---	24	88	---	---	17	55	---	---
Non-Housing Project	0	0	---	---	3	12	---	---	14	45	---	---
CHILD												
Age at Program entry (in months)	33	---	31.9	20-43	27	---	27.6	7.7	31	---	26.9	4.5
Sex: Male	16	48	---	---	13	48	---	---	16	52	---	---
Female	17	52	---	---	14	52	---	---	15	48	---	---
FAMILY												
Total number in family	33	---	6.1	2-10	27	---	5.6	2.0	30	---	5.0	1.3
Number of siblings at home	33	---	2.8	0-9	26	---	3.1	---	29	---	2.2	---
Family language: English	33	100	---	---	23	86	---	---	29	97	---	---
Spanish & English	0	0	---	---	2	7	---	---	1	3	---	---
Spanish	0	0	---	---	2	7	---	---	0	0	---	---
MOTHER												
Age	29	---	28.6	18-46	27	---	27.6	5.0	31	---	26.7	5.2
Years of school	29	---	10.8	6-14	27	---	10.3	2.3	31	---	10.7	1.6
Birthplace: South*	23	79	---	---	13	50	---	---	12	39	---	---
North	6	21	---	---	9	35	---	---	18	58	---	---
Puerto Rica or Cuba	0	0	---	---	4	15	---	---	1	3	---	---
Other	0	0	---	---	0	0	---	---	0	0	---	---
Age when left So. or P.R.	23	---	19.4	---	17	---	16.0	7.9	12	---	16.3	---
Part/all income from Welfare	5	17	---	---	9	33	---	---	12	40	---	---
FATHER												
Occupation: semi or unskilled	23	79	---	---	14	61	---	---	15	54	---	---
Skilled	6	21	---	---	4	17	---	---	8	29	---	---
Age	29	---	31.2	19-52	25	---	30.3	5.2	28	---	29.5	5.9
Years of school	29	---	9.7	4-13	25	---	10.3	2.4	26	---	11.4	1.9
Birthplace: South*	21	72	---	---	14	54	---	---	12	40	---	---
North	8	28	---	---	8	31	---	---	15	50	---	---
West Indies	0	0	---	---	0	0	---	---	1	3	---	---
P.R. or Cuba	0	0	---	---	4	15	---	---	2	7	---	---
Age left South or P. R.	21	---	20.9	---	18	---	19.5	6.4	9	---	15.9	8.6

*Define "South" as: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, N. Carolina, S. Carolina, Tennessee, Virginia W. Virginia

*8 former C_1 Subjects, in MCHP 1968-1969, not included.

TABLE A: VISTA INTERACTION PROJECT

BACKGROUND CHARACTERISTICS OF THREE COMPARISON GROUPS, 1967-1970 (C_1: Visitor only; C_2: Untreated; C_3: VISM only)

Background Characteristics	C_1 Group (Visitor only) N=9				C_2 Group (Untreated), N=12				C_3 Group (VISM only), N=12			
	N	%	Mean	Range	N	%	Mean	Range	N	%	Mean	S.D.
HOUSING TYPE												
Housing Project	9	100	---	---	12	100	---	---	0	0	---	---
Non-Housing Project	0	0	---	---	0	0	---	---	12	100	---	---
CHILD												
Age (in months) at Program entry	9	---	33.9	26-42	12	---	31.5	21-42	12	---	24.9	4.7
Sex: Male	6	67	---	---	9	75	---	---	5	42	---	---
Female	3	33	---	---	3	25	---	---	7	58	---	---
FAMILY												
Total number in family	9	---	5.8	3-8	12	---	5	3-7	12	---	5.2	1.8
Number of siblings at home	9	---	2.1	1-3	12	---	1.7	1-3	12	---	2.1	---
Family language: English	9	100	---	---	12	100	---	---	12	100	---	---
English-Spanish	0	0	---	---	0	0	---	---	0	0	---	---
Spanish	0	0	---	---	0	0	---	---	0	0	---	---
MOTHER												
Age	9	---	28.3	23-35	10	---	26.8	21-32	12	---	24.9	4.2
Years of school	9	---	10.7	7-12	10	---	11.8	11-12	12	---	10.3	1.6
Birthplace: South U.S.*	6	67	---	---	5	50	---	---	8	67	---	---
North U.S.	3	33	---	---	5	50	---	---	3	25	---	---
Puerto Rico/Cuba	0	0	---	---	0	0	---	---	0	0	---	---
Other	0	0	---	---	0	0	---	---	1	8	---	---
Age when left South, P.R., Cuba	6	---	18.3	---	5	---	16.8	---	9	---	19.4	---
Part/all income from Welfare	2	22	---	---	0	0	---	---	8	67	---	---
FATHER												
Age	9	---	29.0	25-33	10	---	27.3	22-34	12	---	29.8	8.0
Years of school	9	---	9.8	8-12	10	---	11.2	8-14	12	---	11.1	1.6
Occupation: semi/unskilled	7	78	---	---	4	40	---	---	9	82	---	---
skilled	2	22	---	---	5	50	---	---	2	18	---	---
Birthplace: South U.S.*	4	44	---	---	4	40	---	---	10	83	---	---
North U.S.	5	56	---	---	6	60	---	---	2	17	---	---
Puerto Rico/Cuba	0	0	---	---	0	0	---	---	0	0	---	---
Age when left South/P.R./Cuba	4	---	18.8	---	4	---	16.8	---	8	---	23.4	5.3

*Define "South" as: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi North Carolina, South Carolina, Tennessee, Virginia, West Virginia.

TABLE 5: VERBAL INTERACTION PROJECT

BACKGROUND CHARACTERISTICS OF GRANDPARENTS OF 1967-1970 EXPERIMENTAL GROUP (IN MCHP)

Grandparents' Characteristics	Band 1 & 2, N = 33 (2 & 3 year Olds) 1967 - 1968 N	%	Mean	Band 3, N = 27 (2 year Olds) 1968 - 1969 N	%	Band 4, N = 30 (2 year Olds) 1969 - 1970 N	%
Yrs. of schooling-All Grandparents							
Mother's mo.: 6th grade or less				16	62	13	47
7th thru 9th grade				5	19	9	32
10th thru 11th grade				3	12	1	4
High Sch. graduate				2	7	4	14
College graduate	29		7.7	0	0	1	3
Mother's fa.: 6th grade or less				18	78	20	74
7th thru 9th grade				2	9	3	11
10th thru 11th grade				1	4	0	0
High Sch. graduate				2	9	4	15
College graduate	29		6.6	0	0	0	0
Father's mo.: 6th grade or less				13	87	15	69
7th thru 9th grade				0	0	1	4
10th thru 11th grade				0	0	1	4
High Sch. graduate				2	13	4	18
College graduate	29		6.1	0	0	1	5
Father's fa.: 6th grade or less				12	100	17	90
7th thru 9th grade				0	0	0	0
10th thru 11th grade				0	0	0	0
High Sch. graduate				0	0	2	10
College graduate	29		6.7	0	0	0	0
Occupation of Both Grandfathers							
Mo's fa.: none or unskilled				14	67	13	57
semi-skilled	25	87		3	14	4	17
Fa's fa.: none or unskilled				6	43	9	60
semi-skilled	26	90		6	43	0	0
Home Residence of Grandparents							
Mo's fa.: usually away from home	12	41		9	33	9	30
usually at home	17	59		18	67	21	70
Mo's mo.: usually away from home	5	13		2	7	1	3
usually at home	24	87		25	93	28	97
Fa's fa.: usually away from home	12	41		3	14	5	24
usually at home	17	59		18	85	16	76
Fa's mo.: usually away from home	5	13		3	14	2	8
usually at home	24	87		19	86	21	92

TABLE 6: VERBAL INTERACTION PROJECT

INTERVENING VARIABLES DURING PERIOD OF MOTHER-CHILD HOME PROGRAM -- 1967-1970, EXPERIMENTAL GROUP

Intervening Variables	Band 1&2 (N=33) 1967-1968		Band 3 (N = 27) 1968-1969				Band 4 (N = 30) 1969-1970			
	N	%	N	%	Mean	S.D.	f	%	Mean	S.D.
Child attended nursery school	6	18	1	4	----	---	2	6	----	----
Mother worked(full or part time)	11	33	11	41	----	---	13	42	----	----
Child started or stopped school	--	--	3	--	1.3	.6	2	--	2.0	1.4
Family members changed schl/work	--	--	9	--	1.9	1.1	7	--	1.9	1.5
Child away from home	--	--	11	--	1.6	.8	0	--	0	0
Increased family membership	--	--	6	--	1.7	.6	0	--	0	0
Decreased family membership	--	--	2	--	1.0	0	0	--	0	0
New Sibling born	6	18	2	7	---	---	5	17	---	---
Child's health "atypical"	--	--	3	11	---	---	3	10	---	---
Child was ill	--	--	22	--	3.6	2.1	24	--	3.6	2.3
Other family members were ill	16	48	13	--	4.1	2.8	21	--	3.1	2.2
Child was hospitalized	--	--	3	--	1	0	0	--	0	0
Other family members hospitalized	--	--	7	--	2.0	1.4	0	--	0	0
Father absent most of period	10	30	8	30	---	---	10	34	---	---
Father unemployed more than 1 wk	8	24	6	22	---	---	5	20	---	---
Mother "had problems"	--	--	10	38	---	---	10	33	---	---
Mother wanted help for problems	--	--	17	63	---	---	22	73	---	---
Modal PED* Rating	--	--	27	--	3.0	.9	30	--	2.9	.9
Mean PED* Score	--	--	27	--	59.9	13.2	30	--	61.1	14.9
Mother's Educational hopes for child:										
High School Graduate	31	94	2	8	---	---	7	23	---	---
College and/or Graduate Schl			21	84	---	---	23	77	---	---
Mother's vocation hope for child:										
Professional	15	45	21	87	---	---	18	67	---	---
No VISM toys owned at entry	--	--	20	74	---	---	24	80	---	---
No VISM books owned at entry	--	--	25	93	---	---	28	93	---	---
No VISM destroyed	--	--	6	22	---	---	11	37	---	---
Few VISM destroyed	--	--	21	78	---	---	16	53	---	---
Most or all VISM destroyed	--	--	0	0	---	---	3	10	---	---

*Physical Environment Description

IV. SUBJECTS' INTERVENTION ACTIVITIES, 1967-1970

Table 7: Intervention (Full Mother-Child Home Program) Variables, 1967-1970 Experimental Groups

Table 8: Dyad's Verbally Related Behavior During Home Sessions, 1968-1970 Experimental Groups

Table 7 summarizes some major intervention (Mother-Child Home Program) variables for each year's Experimental Group, divided by the dyad membership in either Program I (first year of intervention). Note the decrease in the number of Home Sessions cancelled by the mother with each new research year, indicating increasing commitment to the Program by each incoming Experimental group. The average number of Home Sessions in the last research year, 1969-1970, was 38, out of a possible 46, a high degree of participation in a group including young children with the usual vulnerability to illness.

Table 8 allows comparison between two years of Experimental subjects on 29 kinds of behavior and VISM condition rated by the Toy Demonstrator.

TABLE 7: VERBAL INTERACTION PROJECT

INTERVENTION (FULL MOTHER-CHILD HOME PROGRAM) VARIABLES -- 1967-1970 EXPERIMENTAL GROUPS

	Band 1 and 2 (First year, Prog. I) 1967-1968 (With Prof. Interveners) N = 33			Band 3 (First Year, Prog. I) 1968-1969 (Non-Prof. Interveners) N = 27			Band 4 (First Year, Prog. I) 1969-1970 (Non-Prof. Interveners) N = 30			Band 3 (Second Year, Prog. II) 1969-1970 (Non-Prof. Interveners) N = 19		
Intervention Variables	N	Mean	Range	N	Mean	S.D.	N	Mean	S.D.	N	Mean	S.D.
Total number of Home Sessions	33	32.4	22-44	27	34.7	5.8	30	38.3	6.6	19	38.0	6.0
Number of VISM Home Sessions	33	25.2	12-30	27	21.8	2.4	30	22.4	1.6	19	22.7	.6
Number of Review Home Sessions	28	7.1	0-12	27	12.9	4.4	29	16.5	5.1	19	15.3	5.9
# of Home Sessions canc. by mo.	--	---	---	26	9.6	7.0	27	8.0	7.1	15	7.5	3.9
# of Home Sessions canc. by intervener (Toy Demonstrator)	--	---	---	24	5.3	3.1	27	3.4	3.6	16	4.4	1.9
# of VISM toys assigned	33	12	0	27	12	0	30	11	0	19	11	0
# of VISM books assigned	33	16	0	27	11	0	30	12	0	19	12	0
								%			%	
Mean % of Mo's Home Session Activity 61% +	--	---	---	--	---	---	8	29%	---	7	42%	---
Mean % of Mo's Home Session Activity 31-60%	--	---	---	--	---	---	11	39%	---	3	18%	---
Atypical Intervention (% of intervention period)								N=8			N=8	
Child absent 20-50%	--	---	---	--	---	---	1	13%	---	1	13%	---
Father substitutes in Home Session 30% +	--	---	---	--	---	---	1	13%	---	0	0	---
Grandmother substitutes in Home Session 30% +	--	---	---	--	---	---	1	13%	---	2	26%	---
Non-family substitutes in Home Session 30% +	--	---	---	--	---	---	0	0	---	2	26%	---
Comb. TD and Mother-TD 30% +	--	---	---	--	---	---	0	0	---	1	13%	---
VISM left, no Home Sessions (less than 25%)	--	---	---	--	---	---	5	61%	---	2	26%	---

TABLE 8: VERBAL INTERACTION PROJECT

DYAD'S VERBALLY RELATED BEHAVIOR DURING HOME SESSIONS
1968-1970 EXPERIMENTAL GROUPS (MCHP)

(As Rated by Non-Professional Toy Demonsrators: 1=Not present 2=Slightly present
3=Moderately present 4=Markedly present 5=Not applicable)

	PROGRAM I (First Year)						PROGRAM II (Second Yr.)		
Home Session Behavior Rating:*	1968-1969 (N=27)			1969-1970 (N=31)			1969-1970 (N=19)		
	1+2 %	3+4 %	5 %	1+2 %	3+4 %	5 %	1+2 %	3+4 %	5 %
Mother's Behavior:									
Notifies TD of cancellations	19	69	12	35	55	10	16	57	26
Allows friendly interp.relations	15	85	0	7	93	0	5	95	0
Allows relaxed joyous atmos.	22	78	0	11	87	0	5	95	0
Describes VISM	26	74	0	28	66	0	37	63	0
Follows TD's cues	38	58	4	27	66	4	32	68	0
Initiates VISM play ideas	48	52	0	48	52	0	48	52	0
Usually takes lead	51	45	4	48	52	0	47	53	0
Describes own actions	59	41	0	73	27	0	73	27	0
Enc. ch. describe own actions	48	52	0	44	52	0	63	37	0
Gives positive reinforcement	31	69	0	24	76	0	26	74	0
Allows divergence	30	70	0	41	59	0	37	63	0
Encourages divergence	41	59	0	58	42	0	52	48	0
Child's Behavior									
Speaks to TD re VISM	23	77	0	27	73	0	26	64	10
Speaks to Mother re VISM	30	70	0	52	48	0	47	53	0
Soliloquizes re VISM	46	54	0	62	34	0	53	47	0
Concentrates adequately	19	81	0	20	80	0	21	79	0
Responds to guidance	11	89	0	21	79	0	0	100	0
Shows pleasure	7	93	0	3	97	0	10	90	0
Shows interest in VISM	7	93	0	11	89	0	0	100	0
Shows "efficacy"	25	75	0	22	78	0	16	84	0
Pretends: dramatizes roles	26	74	0	42	58	0	53	47	0
Investigates VISM	26	74	0	32	68	0	47	53	0
Experiments	35	65	0	50	50	0	53	47	0
Relates positively to mother	22	78	0	14	86	0	16	84	0
Relates positively to TD	11	89	0	7	89	4	10	80	10
TD's Final Eval.of VISM Condition									
Toy Chest intact	17	83	0	18	77	5	0	89	11
Toys have all parts	33	67	0	43	50	4	29	71	0
Toys undamaged	33	67	0	35	57	4	28	72	0
Books intact	19	81	0	17	79	0	16	84	0

*Where ratings add to less than 100%, a decrease was noted over intervention period.

V. RESULTS FOR SUBJECTS, 1967-1970

Three broad kinds of data were used to measure results of three years of investigation of the effects of the Mother-Child Home Program; standardized tests of the cognitive status of subjects (both general and verbal); the mother's reports of family attitudes and behavioral change at a Final Interview at the end of each year in May or June; and teachers' reports of children's psychosocial behavior in school after termination of the program. Only the mothers' reports and cognitive data were gathered to measure short-term gains at the beginning and end of the research year. All three kinds of data were collected at the first follow-up study of 58 children (41 Experimental; 17 $Comparison_2$, Untreated) enrolled in the Verbal Interaction Project in the first year. Supplementing this data, Toy Demonstrators' reports on children's and mother's behavior at or between Home Sessions, and some data on families, were collected by Supervisors from 1967 through 1970. (See Appendix D, Instruments, 1967-1970.)

Table 9: Mother's Report of Own and Family Attitudes in Final Interview, Second and Third Research Years, Experimental and $Comparison_3$ Groups.

The data gathered from Final Interviews with Program I, Program II, and $Comparison_3$ (VISM only) mothers in regard to the intervention just completed in 1969 and in 1970 is presented in Table 9. Note that on variables shared by both Experimental and $Comparison_3$ Groups, there is considerable similarity in the proportions of mothers' reports of favorable change in subject and family attitudes and behavior. Most mothers, including C_3, reported moderate or marked improvement in family verbal interaction and in their own attitudes. But there were also wide differences between Experimental and C_3 mothers' reports: Experimental mothers had become less punitive and so proud of their children's progress that they were disappointed in the childrens' test performance. On the other hand, C_3 mothers had become more likely to play more with their children and generally to have more positive interaction with their children.

Table 10: Subject Characteristics and Mothers' Attitudes Reported in Follow-up Interview, First Follow-up Study, 1970

Follow-up interviews with mothers, 2½ years after their entry into the Verbal Interaction Project in 1967, indicated several continuing parallels between the life events to which the Experimental and Comparison$_2$ (Untreated) subjects were exposed during that period. (See Table 10.) But subjects in the Experimental group were considerably more likely at Follow-up to be receiving welfare aid and to be living in fatherless homes. On the other hand, the untreated group tended more to have had school experience, to be in normal health, to have working mothers, and to have experienced a death close enough in the family for the child to be aware of it. The expected wide differences in the mothers' ratings of the intervention (which had consisted only of pre and posttesting for the Comparison$_2$ Group) and of the Program's beneficial effects on the child's school adjustment is shown on Table 10. But both groups concurred in their opinion that the research staff had always been considerate in contacts. This opinion was solicited because of the experience of a clinic intervention program that lasting beneficial effects of clinical intervention were strongly related to the mother's feeling of having been well treated by clinic staff.

According to Experimental subjects' mothers, more than half of the original VISM assigned to the children were still owned, with most of them still usable. An even larger proportion of the VISM books were still owned, 10 out of about 13, almost all still usable.

TABLE 9: VERBAL INTERACTION PROJECT

MOTHER'S REPORT OF OWN AND FAMILY ATTITUDES IN FINAL INTERVIEW, SECOND AND THIRD RESEARCH YEARS, EXPERIMENTAL AND COMPARISON GROUPS

Mother's Report at Final Interview	1968-1969 Groups	1969-1970 Groups		C_3
	Prog. I N=27 %	Prog.II N=19 %	Prog.I N-30 %	Prog.I VISM N=12 %
CHILD AND FAMILY				
Child's moderate or marked pos. behav. change	84	90	80	100
Child talks much more	77	47	64	58
Pos. change in father's interaction	58	40	40	75
Siblings'positive reaction to MCHP	84	85	79	78
MOTHER				
MCHP very good	85	100	97	100
Moderate or fairly full goals knowledge	53	60	77	---
Positive change in mother's interaction	72	79	44	67
Knows why present at Home Sessions	92	93	89	---
Knowledge of desirable intersession activity	96	100	100	---
Plays more with child	70	79	47	76
Talksmore with child while playing	84	84	60	75
Talks more with child generally	67	79	67	67
Reads more to child	89	84	73	84
Praises child more	78	89	70	91
Punishes child less	30	33	23	0
More patient with child	63	42	43	67
Learned at least one thing in MCHP	88	89	87	---
Prefers home locus for MCHP	71	94	93	---
If employed, job hampered cooperation	15	35	50	---
Thinks child's POSTTEST performance was relatively poor	45	53	47	25
MOTHER'S ATTITUDES TO TD				
Satisfied with own TD	96	100	100	---
Wishes same TD next year	89	---	89	---
Prefers woman TD	96	79	87	---
Prefers TD same age or older than self	48	11	34	---
Indifferent to TD's skin color	100	95	93	---
TD's language should be same as mother's	78	74	70	---
Indifferent to whether TD lives close by	76	79	50	---
TD should not be friend or relative	36	16	47	---
TD's education not important	56	47	63	---
TD should know more words than mother	63	59	47	---
TD should use correct grammar	89	85	83	---
TD should be neatly dressed	70	63	43	---
TD should be very friendly and warm to child	82	80	77	---
TD should be very friendly & warm to mother	89	78	56	---
TD should not be friendlier to child than mother is	44	50	67	---

TABLE 10: VERBAL INTERACTION PROJECT

SUBJECT CHARACTERISTICS AND MOTHER'S ATTITUDES REPORTED IN FOLLOW-UP INTERVIEW

FIRST FOLLOW-UP STUDY, 1970

Characteristics and Attitudes	1967-1969 E (Treated) Group N = 41		1967-1969 C_2 (Untreated) Group N = 17	
	%	Mean	%	Mean
Child's Age in months		59.5		58.5
Child's School grade: None	21		0	
Preschool	36		63	
Kindergarten	43		38	
Child attended preschool, full or part time	79		100	
Child's health normal	85		100	
Continued contact with MCHP through sib	26		---	
Continued contact with MCHP thru mo. as TD	18		---	
Mother works: full time	37		63	
part-time	21		6	
Welfare aid=part or whole income	24		6	
Father absent from home	29		6	
Sibling born since MCHP termination	26		19	
No serious family illness	50		50	
One serious family illness	40		50	
No family deaths	69		56	
One family death	23		44	
Residential stability (no move)	81		94	
Other major caretaker for child	56		43	
Mother: MCHP was "good or excellent"	97		38	
Mother: MCHP staff "always considerate"	94		100	
MCHP helped C's initial school adjustment	87		40	
MCHP helped C's later school adjustment	87		20	
Number of VISM toys assigned		17.9		---
Number of VISM toys still owned		11.3		---
Number of VISM toys still usable		9.7		---
Number of VISM books assigned		12.9		---
Number of VISM books still owned		10.0		---
Number of VISM books still usable		9.9		---

Table 11: Group General IQ's (Cattell/Stanford-Binet) by Year of Mother-Child Home Program

Table 12: Group Verbal IQ's (Peabody Picture Vocabulary Test) by Year of Mother-Child Home Program

Table 13: Group Differences in General IQ's (Cattell/Stanford-Binet): Pretest vs. Posttest 1, Posttest 2, Follow-up 1

Table 14: Group Differences in Verbal IQ's (Peabody Picture Vocabulary Test): Pretest vs. Posttest 1, Posttest 2, Follow-up 1

Pre-intervention, post-intervention, and follow-up cognitive data is presented in Tables 11, 12, 13 and 14. All subject groups were included in these tables.

1. The general IQ's and gains of the Experimental Groups show a marked favorable contrast to those of the $Comparison_2$ (untreated) group for both short-term and long range gains, that is, at both Posttesting and Follow-up.(Table 11).

2. But note that the $Comparison_3$ Group (VISM only) showed a significant (though lower than Experimental Group) gain in general IQ after one year of "VISM only" intervention, consistent with the mothers' reports of increased verbal interaction and positive changes in child behavior (Table 11).

3. On the other hand, this group showed a noticeable drop in verbal IQ after one year (Table 12);

4. and the $Comparison_2$ (untreated) group showed a significant gain in verbal IQ at Follow-up, though lower than that of any Experimental Group (Table 12).

5. Experimental Groups exposed to the Mother-Child Home Program for two years, or for one full year followed by one year of an abbreviated version of the intervention, showed very large general IQ gains at Posttest and at Follow-up, whether treated by professional or non-professional Toy Demonstrators as interveners (Table 13).

6. The Mean retained general IQ gain for all Experimental Groups was 16.2 (adjusted) points, contrasting with 2.3 IQ points for the Untreated Group (Table 13).

7. The significance of the differences between Follow-up General IQ's and Pretest IQ's (that is, IQ gain) was never at a lower significance level than .01, while the similar differences for the Comparative_2 (untreated) group were non-significant (Table 13).

8. All children, both treated and untreated, made significant gains in verbal IQ at Follow-up as compared to Pretest (Table 14).

9. But the Mean verbal gain for the Experimental Group at Follow-up was 17.9 IQ points, considerably higher than the Comparative_2 Group's gain of 12 points (Table 14).

TABLE 11: VERBAL INTERACTION PROJECT

GROUP GENERAL IQ'S (CATTELL/STANFORD-BINET) BY YEAR OF MOTHER-CHILD HOME PROGRAM (MCHP)

Nine Sub-Groups (by Treatment)	Entry Age (Years)	1967 N[b]	1967 IQ	1967 S.D.	1968 N[b]	1968 IQ	1968 S.D.	1969 N[b]	1969 IQ	1969 S.D.	1970 N[b]	1970 IQ	1970 S.D.
		EXPERIMENTAL GROUPS											
ONE YEAR OF MCHP													
1. Interveners = Social Workers	3	17	88.2[a]	11.0	17	104.5	15.1	—	—	—	(17	100.9	13.8)[c]
2. Interveners = Aides	2	—	—	—	—	—	—	30	86.1[a]	13.3	30	101.9	15.0
3. Interveners = Aides (1967 C_1 Group)	2,3	See 1967 C_1 Group			See 1968 C_1 Group			8	98.5	12.4	(7	109.1	6.6)[c]
TWO YEARS OF MCHP													
4. Interveners = Social Workers: 2nd Yr. = 7 VISM, no Home Sess.	2	7	84.3[a]	8.3	6	99.3	11.8	6	99.3	11.4	(7	98.3	6.4)[c]
5. Interveners = Social Workers; 2nd Yr. = 7 VISM + 9 Home Sess.	2	9	82.3[a]	5.8	8	102.3	10.2	7	106.4	13.1	(9	102.3	12.4)[c]
6. Interveners = Aides; full MCHP for 2 years	2	—	—	—	27	88.9[a]	9.5	27	100.6	9.6	19	108.6	8.4
		COMPARISON GROUPS											
COMPARISON TREATMENTS													
7. $Comparison_1$ (Visitor only)	2,3	9	87.4[a]	11.0	9	88.4	9.5	—	—	—	—	—	—
8. $Comparison_2$ (Untreated)	2,3	11[e]	92.0[a]	9.7	11	94.0	8.8	—	—	—	(16[d]	94.2	19.0)[c]
9. $Comparison_3$ (VISM only)	2	—	—	—	—	—	—	12	85.0[a]	7.7	12	93.0	12.3
TOTALS FOR NEW S'S:		53			27			42			5[d]		
SUBJECT TOTAL: 127													

a. Pretest IQ.
b. N=S's tested at Posttest or follow-up
c. Figures within parentheses = Follow-up study data
d. Follow-up N for C_2 Group larger than first Posttest N because of attrition at Posttest 1
e. 19 C_2 S's actually pretested.

TABLE 12: VERBAL INTERACTION PROJECT

GROUP VERBAL IQ'S (PEABODY PICTURE VOCABULARY TEST) BY YEAR OF MOTHER-CHILD HOME PROGRAM (MCHP)

Nine Sub-Groups (by Treatment)	Entry Age	1967 N[b]	1967 IQ	1967 S.D.	1968 N[b]	1968 IQ	1968 S.D.	1969 N[b]	1969 IQ	1969 S.D.	1970 N[b]	1970 IQ	1970 S.D.
	EXPERIMENTAL GROUPS												
ONE YEAR OF MCHP													
1. Interveners = Social Workers	3	17	75.9[a]	9.6	17	90.1	12.2	---	---	---	(17	90.1	14.2)[c]
2. Interveners = Aides	2	---	---	---	---	---	---	30	81.8[a]	12.7	30	90.5	13.9
3. Interveners = Aides 1967 C_1 Group	2,3	See 1967 C_1 Group			See 1968 C_1 Group			8	86.8	17.4	(7	102.0	12.8)[c]
TWO YEARS OF MCHP													
4. Interveners = Social Workers; 2nd Year = 7 VISM, no Home Sess.	2	7	80.0a	8.0	5	84.8	11.1	6	90.0	12.8	(7	88.3	12.9)[c]
5. Interveners = Social Workers: 2nd Year = 7 VISM + 9 Home Sess.	2	8	79.1[a]	5.7	8	89.1	13.0	7	96.3	14.7	(9	98.6	13.1)[c]
6. Interveners = Aides: full MCHP for 2 years	2	---	---	---	27	84.0[a]	11.8	27	89.3	11.1	19	96.0	11.6
	COMPARISON GROUPS												
COMPARISON TREATMENTS													
7. Comparison$_1$ (Visitor only)	2,3	9	82.6[a]	8.0	9	78.6	12.3	---	---	---	---	---	---
8. Comparison$_2$ (Untreated)	2,3	10[e]	84.1[a]	12.9	10	88.8	13.0	---	---	---	(15[d]	95.9	17.2)[c]
9. Comparison$_3$ (VISM only)	2	---	---	---	---	---	---	12	85.5[a]	8.5	12	79.3	12.4
TOTALS FOR NEW S'S		51			25			42			4[d]		
SUBJECT TOTAL 122													

a. Pretest IQ
b. N = S's tested at Posttest or Follow-up
c. Figures within parentheses = Follow-up Study data
d. Follow-up N for C_2 Group larger than first Posttest N because of attrition at Posttest 1
e. 19 C_2 S's actually Pretested

TABLE 13: VERBAL INTERACTION PROJECT

GROUP DIFFERENCES IN GENERAL IQ's (CATTELL/STANFORD-BINET): PRETEST VS. POSTTEST 1, POSTTEST 2, FOLLOW-UP 1

Nine Sub-Groups (by Treatment)	Entry Year	Pretest vs. Posttest 1 (8 mos. after Pretests) N[a]	Diff.	S.D.	t	Pretest vs Posttest 2 (20 mos. after Pretest) N[a]	Diff.	S.D.	t	Pretest vs. Follow-up 1 (30 mos. after Pretest) N[a]	Diff.	S.D.	t
		EXPERIMENTAL GROUPS											
ONE YEAR OF MCHP[b]													
1. Interveners = Social Workers	1967	17	17.0	10.6	3.4***	—	—	—	—	17	12.7	7.6	6.9***
2. Interveners = Aides	1969	30	15.8	10.4	8.3***	—	—	—	—	—	—	—	—
3. Interveners = Aides (1967 C_1 Group)	1968	See 1967 C_1 Group				8	10.0	13.4	2.1	7	18.1	13.5	3.6**
TWO YEARS OF MCHP[b]													
4. Interveners = Social workers; 2nd Year = 7 VISM, no Home Sess.	1967	9	17.7	12.3	4.3***	9	15.0	15.0	3.0**	7	14.0	11.2	3.3**
5. Interveners = Social Workers; 2nd Year = 7 VISM + 9 Home Sess.	1967	5	18.0	11.0	3.7**	5	24.8	14.0	4.0**	9	20.0	12.8	4.7***
6. Interveners = Aides; Full MCHP for 2 years	1968	27	11.7	7.2	8.4***	19	17.2	7.6	9.9***	—	—	—	—
		COMPARISON GROUPS											
COMPARISON TREATMENTS													
7. $Comparison_1$ (Visitor only)	1967	9	1.0	9.0	.3	C_1 Group became Sub-Group 3(above)				C_1 Group became Sub Group 3 (above)			
8. $Comparison_2$ (Untreated)	1967	11	2.0	9.3	.7	—	—	—	—	16	2.3	17.3	.54
9. $Comparison_3$ (VISM only)	1969	12	8.0	12.2	2.3*	—	—	—	—	—	—	—	—

a. N = subjects tested at Posttest or Follow-up
b. Mother-Child Home Program
*p < .05 **p < .02 ***p < .01

TABLE 14: VERBAL INTERACTION PROJECT

GROUP DIFFERENCES IN VERBAL IQ's (PEABODY PICTURE VOCABULARY TEST): PRETEST VS. POSTTEST 1, POSTTEST 2, Follow-Up 1

Nine Sub-Groups by Treatment)	Entry Year	Pretest vs. Posttest 1 (8 mos. after Pretest) N[a]	Diff.	S.D.	t	Pretest vs. Posttest 2 (20 mos. after Pretest) N[a]	Diff.	S.D.	t	Pretest vs. Follow-up 1 (30 mos. after Pretest) N[a]	Diff.	S.D.	t
						EXPERIMENTAL GROUPS							
ONE YEAR OF MCHP[b]													
1. Interveners = Social Workers	1967	17	15.0	12.3	3.2***	—	—	—	—	17	14.1	11.2	5.2***
2. Interveners = Aides	1969	30	8.6	11.4	4.2***	—	—	—	—	—	—	—	—
3. Interveners = Aides (1967 C_1 Group)	1968	See 1967 C_1 Group				8	3.4	17.5	.6	7	17.6	16.8	2.8*
TWO YEARS OF MCHP[b]													
4. Interveners = Social Workers; 2nd year = 7 VISM, no Home Sess.	1967	5	15.8	8.4	4.2**	6	8.8	16.3	1.3	4	18.0	11.7	3.1*
5. Interveners = Social Workers; 2nd year = 7 VISM + 9 Home Sess.	1967	5	9.6	7.4	2.9*	5	20.8	12.0	3.9**	8	22.1	8.3	7.5***
6. Interveners = Aides; full MCHP for 2 yrs.	1968	27	5.3	12.8	2.2*	19	7.7	14.7	2.3*	—	—	—	—
						COMPARISON GROUPS							
COMPARISON TREATMENTS													
7. Comparison$_1$ (Visitor only)	1967	9	-4.0	9.6	1.5	C_1 Group becomes Sub-Group 3				C_1 Group becomes Sub-Group 3			
8. Comparison$_2$ (Untreated)	1967	10	4.7	16.3	.8	—	—	—	—	14	12.0	20.8	2.1*
9. Comparison$_3$ (VISM only)	1969	12	-6.2	11.8	1.8	—	—	—	—	—	—	—	—

a. N = Subjects tested at both times
b. Mother-Child Home Program
*p $<$.05 **p$<$.02 ***p$<$.01

Table 15: Variables Significantly Related to High IQ Gain and Posttest IQ's, Stanford-Binet, 1968-1969.

Table 16: Variables Significantly Related to High IQ Gain and Posttest IQ's, Stanford-Binet, 1969-1970.

Relationships found by Chi-square test to be significant in 1968-1970 between the dependent variable, translated into IQ gain and posttest IQ, and [illegible] variables (Appendix D) are presented in Tables 15 and 16. (There were no significant relationships found between dependent and other variables in 1967-1968.)

1. Thirty three such "significant" relationships were found out of 540 contingency tables, a number only slightly greater than the 27 to be expected by chance, since most of them are at the .05 level of significance.

2. Moreover, there was almost no duplication of significant relationships in the repetition of the 1968-1969 correlations in 1969-1970.

3. Further, although most of the correlations go in the expected direction some (without any adequate explanation or internal consistency with other variables) do not.

4. The validity of these relationships is thus so much in question as to suggest that the dependent variables cannot be related at present to any other variable except the total independent variable in all of its multiple aspects: the Mother-Child Home Program as a whole. (See Kish, 1959; Kendall, 1957; Lipset et al, 1956, for further discussion of the significance-test issues involved in this conclusion.)

TABLE 15: VERBAL INTERACTION PROJECT

EXPERIMENTAL GROUP VARIABLES SIGNIFICANTLY RELATED TO HIGH IQ GAIN, STANFORD-BINET, 1968-1969

Cross-tab #	Variable (Above Mean for group)	HIGH IQ GAIN PROGRAM I (N=30) Pretest-Posttest 1	
		$\underline{x^2}$	$\underline{p >}$
9	Number of older siblings	4.32	.05
23	Mother born in North	5.59	.02
65	Older sister's intersession play with child	6.34	.02
295	Toy Demonstrator respects mother	4.48	.05
338	Toy Demonstrator gives mother early responsibility	6.71	.01
342	Toy Demonstrator fosters teamwork with mother	5.24	.05

TABLE 16: VERBAL INTERACTION PROJECT

VARIABLES SIGNIFICANTLY RELATED TO HIGH IQ GAIN AND POSTTEST IQ, STANFORD-BINET, 1969-1970

Cross-tab	Variable (Above-Mean Presence)	HIGH IQ GAIN				HIGH POSTTEST IQ			
		Program I (N=30) Pre-Posttest 1		Program II (N=19) Pre-Posttest 2		Program I (N=30) Posttest 1 IQ		Program II (N=19) Posttest 2 IQ	
		X^2	$p <$	X^2	$p <$	X^2	$p <$	X^2	$p <$
9	Number of older siblings	3.94	.05(Inverse)						
84	"Others'" work/school change	7.00	.01						
115	Child pretends, dramatizes in Home Sessions	3.88	.05						
196	Telephone in apartment	7.03	.01			4.74	.05		
226	Mother's ego strength	4.66	.05						
65	Father's intersession play with child			4.28	.05				
74	Older sister's "reading" with child			4.41	.05	4.55	.05		
105	Mother respects Child's divergence, Home Session			6.54	.02				
127	Little negative change, family			5.18	.05				
166	Mother thinks C's ability better than Posttest 2 performance			4.68	.05				
40	Father's birthplace not South (North, etc.)					3.95	.05		
60	Number of VISM Sessions					4.05	.05		
62	Number of Sessions cancelled by mother					4.74	.05		
107	Child's Verbal interaction with TD re VISM					4.07	.05		
126	Little negative change, Home					4.48	.05		
132	Child talks more than pre-MCHP					5.59	.02		
155	VISM toy(s) owned at MCHP entry					5.63	.02		
197	Comfortable H S room temperature					4.05	.05		
201	General cleanliness, H S room					4.73	.05		
95	Mother notified TD of cancellations					5.10	.05		
52	Number in family							4.23	.05
66	Grandparents' intersession play with child							5.00	.05
103	Mother encourages Child to describe play							4.87	.05
124	Positive change in home							4.00	.05
198	Low noise level, H S room							7.53	.01

Table 17: Follow-up Variables Significantly Related to Experimental (Treated) Subjects' High* IQ Gain Retention (N=41).

Table 18: Follow-up Variables Significantly Related to Experimental (Treated) Subjects' High* Pretest Stanford-Binet IQ (N=41)

The total Experimental Group's Mean difference between Pretest and Follow-up IQ on the Stanford Binet, for subjects included in the Follow-up Study, was found to be 15.9 IQ points, and the 41 subjects were identified as "High Gainers": if their gains were at or above this group Mean, and as "Low Gainers" if they were below it. Chi-Square values were then computed for the relationship between IQ gain (as the dependent variable) or Pretest IQ, and 100 other variables (listed in Appendix E). The same procedure was followed with subjects' Stanford Binet Pretest IQ as the dependent variable to be cross correlated with the list of variables in Appendix E.

As shown in Table 17, High Gain retention for General IQ was found to be highly related, as might be expected, to General Verbal IQs at Follow-up and Verbal IQ gain retention. But aside from being related to "High" performance on an instrument being field tested at Follow-up (at or above 65%ile on the Boehm Conceptual Test), High Gain retention was related otherwise only to the marked presence of 10 psychosocial School Behavior Traits rated by children's teachers. There was an especially strong positive association between High Gain retention and school "Attentiveness and Concentration".

But Pretest IQ, as seen in Table 18, was related significantly to the General IQ at Follow-up, to Pretest Verbal IQ, and especially to "High" performance on the Boehm. There was also a relationship to child's entry age, which may be spurious since this relationship was not found in an earlier analysis of Pretest data. Indeed, were it not for the internal consistency of most of the relationships shown on Table 17 and 18, their validity would come into the same kind of question raised in regard to "significant" relationships between the dependent variable and other variables in the on-going research data. "Replicability" consistency in future follow-up study contingency tables will confirm whether the above relationships are genuine. (See Kendall, 1957, for discussion of this solution for testing the validity of the possibly chance significance of contingency tables resulting from "dredging" operations in data analysis.)

TABLE 17: VERBAL INTERACTION PROJECT, Follow-up Study A, 1970

FOLLOW-UP VARIABLES SIGNIFICANTLY RELATED TO E (TREATED) SUBJECTS' HIGH* IQ GAIN RETENTION
(N = 41)

Related Variables		X^2	Significance Level
SCORES AT OR ABOVE GROUP MEAN	Mean		
Follow-up Stanford-Binet General IQ	102.2	10.10	.01
Follow-up PPVT Verbal IQ	93.8	9.79	.01
Difference, Follow-up PPVT Verbal IQ and Posttest 1 Verbal IQ	4.8	8.38	.01
Follow-up Boehm Conceptual %ile	65.8	4.61	.05
SCHOOL BEHAVIOR TRAITS (RATED "MARKEDLY PRESENT" BY TEACHER)			
Attentiveness and concentration		12.69	.001
Creative play		5.90	.02
Cooperation with peers		5.90	.02
Demonstration of social graces		5.90	.02
Well organized		5.40	.05
Completes tasks		3.89	.05
Cooperation with adults		3.88	.05
Acceptance of criticism		3.96	.05
Willing to try new activities		3.89	.05
Is cheerful		4.04	.05

*"High" defined as at or above E Group's Mean Difference of 15.9 points between Pretest and Follow-up Test IQ's on Stanford-Binet.

TABLE 18: VERBAL INTERACTION PROJECT, Follow-up Study A, 1970

VARIABLES SIGNIFICANTLY RELATED TO E (TREATED) SUBJECTS' HIGH* PRETEST STANFORD-BINET IQ

(N = 41)

Related Variables		X^2	Significance Level
SCORES AT OR ABOVE GROUP MEAN:	MEAN		
Follow-up Boehm Conceptual %ile	65.8	10.47	.01
Follow-up Stanford-Binet General IQ	102.2	5.01	.05
Pretest PPVT Verbal IQ	78.7	5.14	.05
Child's month age at entry into VIP	32.1	4.17	.05

* "High" defined as at or above E Group's Mean Pretest IQ of 86.3

VI. RESULTS FOR INTERVENERS (TOY DEMONSTRATORS), 1968-1970

After the first research year (1967-1968), two types of non-professional, adult, female aides were used in 1968-1969 and in 1969-1970 as intervener/Toy Demonstrators (TD's): 11 low-income, high school educated, Paid aides (usually former mother-participants)*; and 34 middle or upper income, mainly college educated, Unpaid volunteers. As indicated in Tables 19 and 20, both TD types were found to be effective interveners, in terms of the children's cognitive gains; and cross-correlation with the amount of IQ gain failed to uncover any difference between the TD types on effectiveness. Further, both types seemed equally (that is, highly) acceptable to the mothers, as seen from data in Table 9, as well as in mid-interview and final interview feedback to the supervisors.

A large amount of data was collected on the TD's: some background characteristics; the amount of their activity during intervention; their intentions to continue as interveners in following years; and their supervisors' ratings of their knowledge, attitudes, Program behavior, and intervention skills.

Table 19: Characteristics of Intervener-Toy Demonstrators, 1968-1969 and 1969-1970

1. Paid TD's were always married, as was the great majority of Unpaid TD's.

2. Unpaid TD's had about 3 years of education above that of Paid TD's.

3. In spite of being 10 to 15 years older than the Paid TD's, the Unpaid TD's had fewer children.

4. About half of the volunteers did other volunteer work as well -- and so did two of the four Paid 1969-1970 TD's.

*Two not included in Tables 19-22 because intervention was only with their own children.

Table 20: Non-Professional Toy Demonstrators' Intervention Activities, 1968-1970

1. The larger number of Home Sessions, assigned dyads, and weekly hours of Paid TD's reflects the Program's giving them more work per week than Unpaid TD's, to compensate for their smaller N as well as to provide incentives to work for the Program.

2. The amount of supervisory time required by high school educated Paid TD's, even those new to the Program, was about the same in 1969-1970 as for the college educated Unpaid TD's, in contrast to 1968-1969, when the former needed more supervisory time. Apparently, as supervisory techniques improved, there was less need by Paid Aides for extra supervision.

3. No TD's attended all 23 weekly supervisory conferences (always with planned cancellations for a variety of personal reasons) but all made up for absences by individual conferences.

4. Volunteer TD's were able to make commitments to working with the Program the following year much more readily than the Paid TD's. The uncertainty of the latter reflected their need for full-time jobs rather than lack of enthusiasm about the Program.

TABLE 19: VERBAL INTERACTION PROJECT, ONGOING RESEARCH 1967-1970
CHARACTERISTICS OF INTERVENER-TOY DEMONSTRATORS, 1968-1969 and 1969-1970

Toy Demonstrator Characteristics	PAID (low-income)						UNPAID (Middle-income)					
	1968-1969 (N=5)			1969-1970 (N=4)			1968-1969 (N=13)			1969-1970 (N=29)		
	%	M	S.D.	%	M	S.D.	%	M	S.D.	%	M	S.D.
Age	—	25.6	5.0	—	30.5	3.7	—	40.1	10.8	—	41.2	9.6
Marital Status: Married	100	—	—	100	—	—	100	—	—	96	—	—
Unmarried	0	—	—	0	—	—	0	—	—	4	—	—
Number of years of school	—	11.7	.6	—	12.0	0	—	15.1	1.9	—	15.1	1.6
Number of children	—	3.0	1.7	—	3.8	2.9	—	2.6	1.1	—	2.7	.9
Current Occupation: Housewife	80	—	—	75	—	—	92	—	—	96	—	—
Housewife and unskilled	20	—	—	25	—	—	0	—	—	4	—	—
Housewife and executive	0	—	—	0	—	—	8	—	—	0	—	—
Recruited by: Former S, MCHP	100	—	—	100	—	—	0	—	—	0	—	—
NCFSA Volunteer Dept.	0	—	—	0	—	—	61	—	—	32	—	—
Acquaintance was TD in MCHP	0	—	—	0	—	—	31	—	—	32	—	—
Other	0	—	—	0	—	—	8	—	—	36	—	—
Other current volunteer job:none	100	—	—	50	—	—	58	—	—	54	—	—
Full Time	0	—	—	0	—	—	0	—	—	0	—	—
Part Time	0	—	—	50	—	—	42	—	—	46	—	—

TABLE 20: VERBAL INTERACTION PROJECT

NON-PROFESSIONAL TOY DEMONSTRATORS' INTERVENTION ACTIVITIES, 1968-1970

Intervention Activity (N of work weeks = 26)	September 1968 - June 1969 (N=18)								September 1969 - June 1970 (N=33)							
	Paid (N=5)				Unpaid (N=13)				Paid (N=4)				Unpaid (N=29)			
	N	%	M	S.D. or Range	N	%	M	S.D. or Range	N	%	M	S.D. or Range	N	%	M	S.D. or Range
With Subjects																
Number of Home Sessions	5	--	100.0	20-168	13	--	29.6	26-76	4	--	85.5	33-146	29	--	49.1	26-124
Number of Hours per week	5	--	5.7	1.7	13	--	4.1	.30	4	--	6.3	1.5	29	--	5.4	1.4
Visited (50% of Program)	5	--	3.3	1.0	10	--	1.2	.40	4	--	2.8	1.5	29	--	1.1	.3
Number of "occasional" dyads visited (Less than 50% of Program)	4	--	1.5	.7	7	--	1.3	.5	4	--	1.3	.5	29	--	1.0	1.3
Total number of dyads visited	5	--	4.5	2.0	13	--	1.6	.7	4	--	4.0	1.2	29	--	1.4	2.8
Supervision																
Number of group supervisory conferences attended	5	--	19.8	8.0	13	--	17.2	4.6	4	--	16.0	3.6	29	--	19.8	3.0
Number of individual supervisory conferences	5	--	12.0	4.4	13	--	5.0	3.1	4	--	5.3	2.6	29	--	5.4	2.5
Number of telephone supervisory conferences	5	--	7.5	12.5	13	--	9.1	5.0	4	--	4.3	2.1	29	--	8.2	6.2
Plans to continue next year	1	20	--	--	10	77	--	--	2	50	--	--	21	72	--	--
Does not plan to continue next year	1	20	--	--	2	15	--	--	0	0	--	--	4	14	--	--
Undecided re continuing next year	3	60	--	--	1	8	--	--	2	50	--	--	4	14	--	--

Table 21: Supervisors' Ratings of Toy Demonstrators' Knowledge and Attitudes as Moderately or Markedly Present

Table 22: Supervisors' Ratings of Toy Demonstrators' Program Behavior and Skills as Moderately or Markedly Present

The items listed in Tables 21 and 22 comprise the goals set by the Program for each TD's job performance, apart from her knowledge and application of specific verbal interaction techniques. The supervisors and TD's jointly (in individual conferences) rated the TD's on a four-point scale indicating the amount of presence of each item, from 1 (slightly Present) to 4 (Markedly Present). The individual rating conferences occurred twice during the Program year; about two months after it began, and shortly before it ended. Only the latter ratings are presented here. The supervisors were firm about work expectations; the mainly high ratings probably represent actual TD performance rather than low supervisory standards.

1. Work performance of both types of TD's improved in the second year of their employment, regardless of individuals' newness in the Program, possibly reflecting improved supervisory techniques. By the end of the second year, competence for both TD types was moderately or markedly present.

2. Paid TD's tended more to understand Program goals and their own role in relation to them (Table 21).

3. Paid TD's tended not to be as punctual for TD conferences, as adaptive to emergencies, as independent from supervision, and as quick in recognizing their own patterns with the dyads as the Unpaid TD's (Table 22).

4. Otherwise, Paid TD's equaled or surpassed the Unpaid TD's on every item rated at the end of the second year of their employment.

5. An apparently low rating for both types in "Growth in job performance" was an artifact resulting from the initially high performance of so many TD's that a relatively low percent could be judged to have "grown" by the end of the Program year. But note that this figure is higher for Paid TD's, indicating that they began with lower job performance than the Unpaid TD's, and then caught up with the latter in adequacy of job performance.

6. Caution must be exercised in judging the ratings of paid TD's because of their small N.

TABLE 21: VERBAL INTERACTION PROJECT ONGOING RESEARCH, 1967-1970

SUPERVISORS' RATINGS OF TOY DEMONSTRATORS' KNOWLEDGE AND ATTITUDES AS MODERATELY OR MARKEDLY PRESENT

Knowledge and Attitudes	PAID (Low-income)		UNPAID (Middle-income)	
	1968-1969 N = 5 %	1969-1970 N = 4 %	1968-1969 N = 13 %	1969-1970 N = 29 %
Understands MCHP goals and own role	80	100	100	86
Respects family's privacy	80	100	100	100
Observes confidentiality	80	100	100	100
Positive attitude toward mother	80	100	92	100
Positive attitude toward child	100	100	100	100
Respects mother	60	100	100	100
Respects child	80	100	100	100
Sensitive to mother's feelings	80	100	85	96
Sensitive to child's feelings	80	100	100	96
Non-judgemental re family	80	100	100	96
Recognizes child is mother's responsibility	100	100	100	96
Recognizes own patterns with dyad	80	75	85	96
Flexible interaction with dyad	80	100	100	100
Controls own negative trends	100	100	77	100
Adequate self-esteem in re job	80	100	92	100
Commitment to MCHP goals	100	100	100	100
Good judgement with dyad	80	100	92	100

TABLE 22: VERBAL INTERACTION PROJECT, ONGOING RESEARCH, 1967-1970

SUPERVISORS' RATINGS OF TOY DEMONSTRATORS' PROGRAM BEHAVIOR AND SKILLS AS MODERATELY OR MARKEDLY PRESENT

Behavior and Skills	PAID (Low-income)		UNPAID (Middle-income)	
	1968-1969 N = 5 %	1969-1970 N = 4 %	1968-1969 N = 13 %	1969-1970 N = 29 %
DEPENDABILITY				
Appropriate dress	80	100	100	100
TD Conference - attendance	60	100	100	96
TD Conference - punctuality	40	75	85	96
Ind. Sup. Conf. - attendance	60	100	92	100
Ind. Sup. Conf. - punctuality	40	100	92	96
Home Sessions - attendance	80	100	92	100
Home Sessions - notifies mo.if cancels	80	100	100	96
Home Sessions - records(#21)up to date	60	100	92	96
Home Sessions - signatures up to date	60	100	100	100
Accuracy of objective records	60	100	92	96
Adequacy of written comments	40	100	100	100
USE OF SUPERVISION AND GROUP				
Learns undefensively	100	75	85	100
Asks appropriate questions	80	100	85	100
Contributes to discussion	80	100	85	93
Independent of supervisor	60	100	69	96
Interacts well with other TDs	80	100	92	100
Helps other TD's in group	80	100	85	89
Accepts help from supervisor	100	100	92	100
Makes good use of supervision	80	100	100	100
Modifies behavior bec. of supervision	80	100	85	100
Adapts to organization/time change	80	100	100	96
WORK SKILLS				
Uses TD-VISIT techniques in H.S.	80	100	100	100
Uses self creatively	60	100	100	93
Gives mother early responsibility	40	100	85	71
Takes adequate care of materials	80	100	100	100
Relates to child in Home Sessions	100	100	100	100
Relates to mother in Home Sessions	100	100	92	96
Fosters teamwork with mother	60	100	92	89
Manipulates VISM adequately	80	100	100	100
Adapts to emergencies	80	75	62	86
Overall ability	60	100	85	96
Growth in job performance	60	75	38	57
Needs only routine supervision	20	75	54	96

VII. MAJOR FINDINGS AND IMPLICATIONS OF VERBAL INTERACTION PROJECT RESEARCH OF MOTHER-CHILD HOME PROGRAM

EFFECTIVENESS OF THE MOTHER-CHILD HOME PROGRAM

The Mother-Child Home Program was cognitively effective with 98 low-income preschoolers, most of them identified by skin color as "Negro". Significant IQ gains were made by Experimental Groups in every planned variation of the Program but with differing amounts of potency (Tables 11-14):

1. One year of the Program with professional social workers as interveners produced an extremely high cognitive gain (17 IQ points). Twenty months later, even though the gain had decreased by about 4 points, the decrease was not significant.

2. One year with professionals as interveners followed by an additional year of reinforcement produced still higher gains (new total of 24.8 IQ points.

3. One year with non-professional interveners produced a very high IQ gain (12 IQ points).

4. Two years with non-professional interveners produced the same extremely high gain of 17 IQ points, as the professionals' one year, but not enough time has elapsed to test its stability in Follow-up.

5. Mean Follow-up results with 41 subjects, 20 months after Pre-testing, demonstrated IQ gain retention of 15.9 points, almost equal to the initial 17 point IQ gain.

6. The VISM (toys and books) themselves may be powerful verbal-cognitive stimulators, since the $Comparison_3$ Group, receiving VISM only, made significant short-term (one year) gains in general IQ (8 points). But this finding is equivocal, since the same group also lost 6 points in verbal IQ (Tables 13 and 14).

7. No single variable was found to be firmly associated with IQ gain.

ABSENCE OF HAWTHORNE EFFECT

The cognitive gain of the Experimental children was not caused by the Hawthorne effect of (non-verbally stimulating) pleasant home visits and gifts by an interested professional interviewer. (See Comparison$_1$ Group results, Table 1.)

FEASIBILITY

The Mother-Child Home Program was originally designed and increasingly refined to practical feasibility for replication outside of its current research setting in the Verbal Interaction Project:

1. It is "exportable" for local use in other parts of the country.

2. It can utilize interveners on varying levels of professional skill and educational background from unskilled high school graduates to highly skilled family-oriented professionals, after full training of the professionals to act as Program Supervisors. Further, adult volunteers can be enlisted as interveners, thus reducing program costs (estimated now to be about $400 per unit). (See Tables 19 - 22.)

ACCEPTABILITY TO MOTHERS, SUBJECTS, COMMUNITY

The Mother-Child Home Program was highly acceptable to mothers, children, and their families. The mothers' enthusiasm was reflected not only in their formal reports (Tables 9 and 10) and in interveners' day to day contact with them, but in the mothers' conscientiousness in keeping Home Sessions appointments. The latter became more apparent in each succeeding year (See Table 7). In 1969-1970, the last year of Children's Bureau support, the average number of Home Sessions cancelled by mothers (almost always because of illness) was 7.2 out of a possible 46. Community acceptance of the Program has been noted to be excellent, both by individuals and by organized groups.

EFFECTIVENESS OF LOW-INCOME MOTHERS

Low-income mothers with modest intellectual and educational attainments effectively contributed to the cognitive growth of their own children. (Table

LARGE FAMILY SIZE NO HINDRANCE

Large family size did not impede the children's cognitive growth in the Mother-Child Home Program (Table 3).

NO "CRITICAL PERIOD"

Between the ages of about two and about four years, there appears to be no "critical period" for maximum effectiveness of the Mother-Child Home Program (Table 1).

EARLY IDENTIFICATION OF HIGH-RISK CHILDREN

The deviant/immature Home Session behavior of 7 Experimental Subjects with low IQ gain in the Program suggests that such high-risk children can be identified early for special individual or family assistance (Table 2).

VIII SUMMARY AND FUTURE PLANS

The findings of the Verbal Interaction Project over three years of research confirmed the major hypothesis that the experimental cognitive intervention (the Mother-Child Home Program) would be significantly related to the cognitive growth of low-income, mainly "Negro" very young preschoolers exposed to it. The close tie between language and cognition is demonstrated by this investigation, using a verbally oriented intervention program. This program did not appear to tamper with the basic flavor of the language of either subjects or interveners. Although the language of many of the families in our sample was rich in sub-culture characteristics, and the preservation of such qualitites may be of special interest, our research was not addressed to the black or any other ethnic group. Rather, our target population was the poor; and our endeavor was not to confound race with class, although we chose a mainly "Negro" sample as one especially vulnerable to poverty.

Special note should be made of the fact that gains made in the course of the Program, significantly higher than those made by contrast groups, have been retained in the follow-up study done within the time limits of Children's Bureau support.

Over the years since the Project began, a number of other authors have reinforced the theoretical framework of this study with important contributions: for example, the concept of "Ur-education," related to family function in early education put forth by Schaefer (1969); Millar's encyclopedic study of the role of play in the lives of children (1968); the empirical findings in England of Moore, associating the quality of the home during the period of language acquisition to the general ability of eight year olds (1968); attention to the motivational variables associated with IQ changes in deprived preschoolers by Zigler and Butterfield (1968); and an early report of a cross-cultural study of the widespread influence of social factors on early language acquisition by Slobin (1968). More evidence on the influence of poverty on phenotype is becoming available in significant studies such as that of Golden et al (1969), so that Hunt

could comment in a recent encompassing review (1971): "The evidence for my contention that such defects in the competence of very young children as I have been describing are a matter of the kinds of experience typically associated with poverty rather than a matter of race is becoming increasingly systematic and compelling."

These recent works will be integrated into the conceptual foundation of the Verbal Interaction Project's future research of the Mother-Child Home Program. On the other hand, the re-kindling of the nature-nurture debate by the work of Jensen (1968) will also be taken into account in our future investigation. Therefore, we will continue work already started (yearly increase of N in collecting data on the short-term cognitive effects of the Program; yearly Follow-up Studies, hopefully into fifth grade, of gain stability and effect on school performance and attitudes; and continuation of the effects of "VISM only" on the Comparison Group), and begin the assessment of such areas as:

1. Affective gains associated with the Program, including the psychosocial development of the child and changes in mother's child-rearing practices;

2. Factors associated with variability in individual cognitive and affective gain;

3. Replication of the Mother-Child Home Program in settings other than our own; and

4. "Associative" and "conceptual" intelligence, as described by Jensen (1969), of subjects followed through elementary school years.

Along with continuation of its primary responsibility to investigate the areas mentioned above, the Verbal Interaction Project also feels the obligation to deal with the issue and problems of dissemination of the Mother-Child Home Program to either local or national agencies. The impression comes from the large, continuing, and increasing interest in the Program shown by agencies throughout the country. In anticipation that research

results might warrant dissemination, the Verbal Interaction Project began field testing dissemination methods by conducting a pilot Training Institute for outside institutions in June 1970, and by laying the groundwork before the end of Children's Bureau support in August 1970 for replication of the Mother-Child Home Program by four pilot agencies, for data feedback and for gaining experience in consultation and teaching. These activities will continue and perhaps be expanded to help other institutions as dissemination experience and research results indicate.

In any case, the Verbal Interaction Project's Mother-Child Home Program will continue to be available as a standard setting model, for demonstration to interested professionals of a type of intervention which is effective and feasible. It is also a constant reminder of the importance of families at a time in our history when the institution of the family is coming under attack. The low-income family, like higher-income families, has been shown through this study to be an effective cognitive socializer for at least its youngest members and is likely to be strengthened thereby for its more primary task of preserving human values. For the family, with its function of developing and enhancing human emotional capacities to their optimum, probably remains the unique and indispensable societal institution for the care and nurture of truly human beings.

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APPENDIX B

HOME SESSION RECORD, LISTING CATEGORIES AND SUBCATEGORIES OF VERBAL INTERACTION STIMULATED BY TOY DEMONSTRATOR

VERBAL INTERACTION PROJECT, MOTHER-CHILD HOME PROGRAM
VISM (Verbal Interaction Stimulus Material) SESSION RECORD

Child: Toy Demonstrator: Case#:
Session#: New Vism#: Review Vism#:
Day, Date, Hour: Duration: min. Others present:

INSTRUCTIONS: Rate categories and subcategories (of techniques of behavior) by prominence of presence within VISM Session, whether because of frequency or emphasis. Use coding below. For categories, circle number in right hand margin; for subcategories, write a number to right of each word in parenthesis.
CODING: 1-not present; 2-slightly present; 3-moderately present; 4-markedly present; 9-not applicable.

TECHNIQUES DEMONSTRATED BY TOY DEMONSTRATOR:

GIVES INFORMATION(form_color_size_texture_naming_causality_relationship_number_describes child's behavior_) 1 2 3 4 9

ELICITS RESPONSE(questions_associates to experience_invites response_) 1 2 3 4 9

DESCRIBES OWN TOY MANIPULATION(large muscle & small muscle_builds_matches_fits_specific motor skills_sound patterns_) 1 2 3 4 9

GIVES POSITIVE MOTIVATION(verbal support_urges attention_help_) 1 2 3 4 9

VERBALIZES SOCIAL INTERACTION(invites_directs_cooperates_) 1 2 3 4 9

ENCOURAGES REFLECTION(alternatives_consequences_restrains impulsivity_redirects attention_) 1 2 3 4 9

ENCOURAGES DIVERGENCE(independence_curiosity_difference_imagination_) 1 2 3 4 9

ENGAGES INTEREST IN BOOK(child close_uses illustrations_elicits verbalization_associates to child's experience_reads aloud_flexible voice_) 1 2 3 4 9

TECHNIQUES USED BY MOTHER:

GIVES INFORMATION(form_color_texture_size_naming causality_relationship_number_describes child's behavior_) 1 2 3 4 9

ELICITS RESPONSE(questions_associates to experience_invites response_) 1 2 3 4 9

DESCRIBES TOY MANIPULATION(large & small muscle_builds_matches_fits_specific motor skills_sound patterns_) 1 2 3 4 9

GIVES POSITIVE MOTIVATION(verbal support_urges attention_help_) 1 2 3 4 9

VERBALIZES SOCIAL INTERACTION (invites_directs_cooperates_) 1 2 3 4 9

ENCOURAGES REFLECTION(alternatives_consequences_restrains impulsivity_redirects attention_) 1 2 3 4 9

ENCOURAGES DIVERGENCE(independence_curiosity_difference_imagination_) 1 2 3 4 9

ENGAGES INTEREST IN BOOK(child close_uses illustrations_elicits verbalization_associates to child's experience_reads aloud_voice flexible) 1 2 3 4 9

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CHILD'S BEHAVIOR	CHILD:	DATE
VERBALIZES INFORMATION(form__color__size__texture__naming__causality__ relationships__number__own behavior with toy__)		1 2 3 4 9
NON-VERBAL COMMUNICATION OF INFORMATION(vocalizes__recognizes uses or concept__gestures__follows cues__)		1 2 3 4 9
RESPONS VERBALLY(imitates__answers__converses__)		1 2 3 4 9
SPEAKS(vocalizes__soliloquizes__questions__initiates conversation__ narrates__describes__)		1 2 3 4 9
DEMONSTRATES ADEQUATE CONCENTRATION(listens_focuses visually__ hyperactivity__distractability__appropriate attention shift__)		1 2 3 4 9
SHOWS DIVERGENCE(investigates__experiments__differes__dramatizes roles_ initiates independent play_)		1 2 3 4 9
SHOWS POSITIVE MOTIVATION(interest__pleasure__joy__efficacy__)		1 2 3 4 9
MANIPULATES TOY(large & small muscle__builds__matches__fits__ specific motor skills__sound patterns__inappropriate manipulation__ takes apart__takes care of__)		1 2 3 4 9
INTERACTS SOCIALLY(complies__initiates__cooperates__plays with__ solitary play__helps__)		1 2 3 4 9
SHOWS INTEREST IN BOOK(close to TD or mother__listens__appropriate activity__verbalizes__associates__)		1 2 3 4 9
ACCEPTS TOY INTRODUCED(looks at__holds__verbalizes pleasure__ indicates pleasure__plays with__)		1 2 3 4 9
OTHER(e.g., approach to VISM):		

POSITIVE INTERPERSONAL ATTITUDES		NEGATIVE INTERPERSONAL ATTITUDE	
Child to TD	1 2 3 4 9	Child to TD	1 2 3 4 9
Child to Mother	1 2 3 4 9	Child to Mother	1 2 3 4 9
Child to Father	1 2 3 4 9	Child to Father	1 2 3 4 9
Child to Sibling(older)	1 2 3 4 9	Child to Sibling(older)	1 2 3 4 9
Child to Sibling(younger)	1 2 3 4 9	Child to Sibling(younger)	1 2 3 4 9
Mother to TD	1 2 3 4 9	Mother to TD	1 2 3 4 9
Mother to Child	1 2 3 4 9	Mother to Child	1 2 3 4 9
Father to Child	1 2 3 4 9	Father to Child	1 2 3 4 9
Older Sib to Child	1 2 3 4 9	Older Sib to Child	1 2 3 4 9
Younger Sib to Child	1 2 3 4 9	Younger Sib to Child	1 2 3 4 9

TOY DEMONSTRATOR'S COMMENTS:

APPENDIX C

Verbal Interaction Project
of Family Service Association of Nassau County, Inc.
MOTHER-CHILD HOME PROGRAM

TOY DEMONSTRATOR'S VISIT* HANDBOOK

Guide to Verbal Interaction Techniques Used with VISM in Home Session

VISM Name(book): The Little Fish That Got Away PROGRAM I - VISM #21

TO DEMONSTRATE THE LITTLE FISH THAT GOT AWAY TO THE MOTHER:

1. Invite the child to look and listen.
2. Try to sit with the child between you and his mother.
3. Show and read the title page.
4. Show and describe how to turn the pages and treat the book.
5. Read to him in a clear, easy voice. Don't go too fast.
6. Stop at most illustrations to:

invite him to point out labels; ask him to name them and:

colors: blue water, gray fish, black fish, white apron on mother
shapes and sizes: great big, big, medium sized, little: FISH
number: one fish, two fish, three fish
texture: smooth cover
relationships: swam away from, inside the basket, next to the other fish in basket
categories: family, food
causing things to happen: "Because the big fish ate the worm, the boy caught him on his fish hook holding the worm."

invite him to tell about his experiences:

"Did you ever eat a fish for dinner?"

ask questions about the illustrations to help him reason things out(make it a game)

"Why did the boy laugh when the little fish got away?"

7. Encourage him to join in when you read familiar words.
8. Enjoy the book yourself.
9. Invite the mother to take over the reading as soon as she and child seem ready.

REMEMBER

Encourage him to TALK
ASK him questions
LISTEN to his answers
ANSWER his answers

Encourage him to WANT TO LEARN
Praise him when he does well
Try to ignore his mistakes
Help him when he really needs help

Encourage his CURIOSITY
his IMAGINATION
his INDEPENDENCE

*Verbal Interaction Stimulation Intervention Techniques

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APPENDIX C

Verbal Interaction Project
of Family Service Association of Nassau County, Inc.
MOTHER-CHILD HOME PROGRAM

TOY DEMONSTRATOR'S VISIT* HANDBOOK

Guide to Verbal Interaction Techniques Used with VISIT in Home Session

VISIT Name: Balloon Game PROGRAM II VISIT#: 12

TO DEMONSTRATE THE BALLOON GAME TO THE MOTHER:

NAME, AND ENCOURAGE THE CHILD TO NAME:

Labels: game, balloons, children, cards, boy, girl, man, basket, doll wagon, circles, die
Colors: "The balloons are red, yellow, blue, green, orange and white.
Shapes: round balloons, rectangular cards
Size: small children, large man
Texture: smooth paper, cards and balloons
Relationships: "Balloons are on top of card, children are in the basket"
Number: four cards, six balloons
Causing things to happen: "If you cover every balloon on your card with the same color circle, you win the game."
Words that classify: children, boys, girls, clothing

DESCRIBE YOUR ACTIONS, ENCOURAGE THE CHILD TO DESCRIBE HIS ACTIONS

General: "Let's play the balloon game."
Matching: color of circle on die to color of balloon, balloon to balloon on card
Fitting: "Let's fit the cards back into the box."
Sounds: "The cardboard balloon falling on the table makes a quiet sound."

REMIND HIM TO THINK ABOUT WHAT HE DOES

To give his attention: "Can you find a balloon in the box that matches a balloon on your card?"
To make a choice: "Whose turn is it?"
To have self-control: "Wait your turn, roll the die gently."
To remember other experiences: "Have you ever had a toy like a balloon?" Do you have a dress or hat like the child in the picture?"
To pretend: "Let's pretend the circles are coins."
To do things in the right order: "First roll the die, then choose the matching circle."

REMEMBER, THROUGHOUT THE HOME SESSION, TO:

Encourage him to TALK
ASK him questions
LISTEN to his answers
ANSWER his answers

Encourage him to WANT TO LEARN
Praise him when he does well
Try to ignore his mistakes
Help him when he really needs help

Encourage his CURIOSITY
his IMAGINATION
his INDEPENDENCE

*Verbal Interaction Stimulation Intervention Techniques

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APPENDIX D: RESEARCH INSTRUMENTS, 1967 - 1970

Name of Instrument	Form #	1967-68	1968-69	1969-70
Standardized				
Cattell Infant Intelligence Scale	--	X	X	X
Stanford-Binet Intelligence Scale	--	X	X	X
Peabody Picture Vocabulary Test	--	X	X	X
Wechsler Intelligence Scale for Children (Follow-up)	--			X
Wide Range Achievement Test (Follow-up)	--			X
Boehm Test of Basic Concepts (Follow-up)	--			X
Verbal Interaction Project				
VISM Session Record	1	X		
Non-VISM Session Record	2	X		
Intersession Record	3	X		
Progress Rating of Child's Behavior	14	X		
Mothers' Self-Rating Scale	6	X	X	X
Initial Interview	42	X	X	X
Frequency of Intervention Variables	40		X	X
Intelligence Test Results	48		X	X
Toy Demonstrator's Evaluation of Dyad Cooperation	31		X	X
Final Interview with Mother	39		X	X
Toy Demonstrator's Application Interview	43		X	X
" " Activities During Intervention	44		X	X
Supervisors' Evaluation of Toy Demonstrator	30		X	X
PED Scale	49		X	X
Supervisor's Evaluation of Dyad Progress	50		X	X
Follow-up Home Interview - A	55			X
" " " " - B	60			X
" " School Behavior Traits	65			X
" " MSRS Depressed Mood Index	64			X
Home Session Record	21		X	X

APPENDIX E: 135 VARIABLES CROSS-CORRELATED WITH SHORT-TERM GENERAL IQ GAIN AND (IN 1970) PRE/POSTTEST IQ, 1969 AND 1970

#	VARIABLES
2	Sex of child
6	Health status of child
7	Regular activity, child
9	# of older siblings
11	Family language
12	Papers and magazines
13	Books
14	Radio and T.V.
15	Pictures and decorations
16	Toys and games
17	Mother's age
18	Mother's education
23	Mother's place of birth
25	Mother's work hours
27	Mother's income source
36	Father's age
37	Father's education
39	Father's birthplace
42	Father's occupation
43	Father's source of income
51	# in family exclud.child
56	Type of TD
57	Total Home Sessions
58	Total VISM Sessions
59	Total Review Sessions
60	Home Sessions canc. by mo.
61	Home Sessions canc. by TD
62	Play frequency by mother
63	Play frequency by father
64	Play frequency by grandp.
65	Play frequency by old.sis.
66	Play frequency by old.bro.
67	Play frequency by young sib
68	Play frequency by other
69	Read.frequency by mother
70	Read.frequency by father
71	Read.frequency by grandp.
72	Read.frequency by old.sis.
73	Read.frequency by old.bro.
74	Read.frequency by other
75	Illness, child
76	Illnesses, other
79	Times child away fr.home
82	Wk.orSchl.change,other
89	Home Sess. held regularly
90	TD notified of cancellation
91	Home Sess.interpersonal relationship friendly
92	Home Sess.atmosphere relaxed. Joyous
93	Mo.speaks re VISM in H.S.
94	Mo.follows TD's cues
95	Mo.initiates VISM ideas
96	Mo.takes lead in ½ of H.S.
97	Mo.describes own action
98	Mo.encourages C.to describe
99	Mo.gives positive reinforce
100	Mo.allows indep., curious., divergence
101	Mo.encour. imag,divergence
102	Child spks to TD re VISM
103	Child spks to Mo.re VISM
104	Ch. soliloquizes re VISM
105	Ch. concentrates adequately
106	Ch. responds to guidance, verbal and non-verbal
107	Ch. shows pleasure in H.S.
108	Ch. shows interest in VISM
109	Ch. shows "efficacy"
110	Ch. pretends,dramatizes roles
111	Ch. investigates VISM
112	Ch. experiments
113	Ch. relates pos. to Mo.
114	Ch. relates pos. to TD
115	Toy Chest intact
116	Toys have all parts
117	Toys undamaged
118	Books intact
119	Major pos.change in home
120	Major pos.change in family
121	Major neg.change in home
122	Major neg.change in family
126	Child's behavior change
127	Child talks more
128	Mo's. changed interaction
129	Fa's. changed interaction
133	Mo's. changed play w. ch.
134	Mo's. changed play-talk
135	Mo's. changed general-talk
136	Mo's. changed reading amt.
137	Mo's. changed praise & enc.
138	Mo's. changed punitiveness
139	Mo's. changed patience
150	VISM-Toys owned at MCHP entrance
151	VISM-Books owned MCHP ent.
161	Mo's. compar.c's test with ability
184	Final(modal)PED rating
189	Total PED score
	Home Session Environment
	Room
190	Daily use
191	Phone in apartment
192	Temperature
193	Noise level
194	Illumination
195	Air
196	General cleanliness
	Furnishings
197	Seating
198	Furniture condition
199	Color coordination
200	Spatial organization
201	Order
202	Curtains
203	Decorations
204	Books,magazines,hi-fi
205	Trophies, pictures
206	Special interest
	Appearance
207	Child's clothing
208	Mother's clothing
209	Child's body care
210	Mother's body care
221	Mother's ego strengths
228	Siblings in MCHP
	Toy Demonstrators
248	Age
255	Number of children
292	Positive attitude to mo.
293	Positive attitude to child
294	TD respects mother
295	TD respects child
296	Sensitive to mo's.feelings
297	Sensitive to ch's.feelings
298	Non-judgemental re family
299	Knows c is mo's respons.
301	Flexible interact.w dyad
302	Controls own neg. trends
303	Adequate self esteem
337	Gives mo. early respons.
340	Relates to mo.in H.S.
341	Fosters teamwork with mo.
346	Overall ability

APPENDIX F: 100 VARIABLES CROSS-CORRELATED WITH FOLLOW-UP 1 GENERAL IQ GAIN RETENTION AND PRETEST IQ, 1970

# VARIABLES	# VARIABLES	# VARIABLES
Child	83 MCHP helped later schl	**Child**
3 Month age at Follow-up	84 C's toys/books to schl	
4 Month age at entry	85 C's schl. social adj.	134 Pretest general IQ
10 Sex	86 C's schl.achievement	135 Pretest verbal IQ
12 School grade	87 C's schl.social adj. vs. older sib.	138 Posttest 1 - general IQ
13 Health	88 C's schl.achievement vs. older sib.	139 Posttest 1 - verbal IQ
14 Regular outside activities	89 MCHP effect,sibs	142 Posttest 2 - general IQ
18 MCHP cont.affer term.	90 MCHP effect,father	143 Posttest 2 - verbal IQ
11 Mother became TD	91 MCHP effect,family	146 Follow-up 1 general IQ
15 # Sibs. home	92 MCHP effect,child	147 Follow-up 1 verbal IQ
16 # Older sibs. home	93 # VISM toys assigned	148 Follow-up 1 concept %ile
17 # Younger sibs. home	94 # VISM toys still own.	149 Difference-pre & FU gen.IQ
21 Mother works	95 # VISM " " usable	152 Difference-pre & FU verb.IQ
22 Mother on welfare	96 # VISM books assigned	
23 Father in home	97 # VISM books still own	**PED**
24 Father's occupation	98 # VISM " " usable	161 Frequency,PED rating 1
27 Total number in family		162 Frequency,PED rating 2
28 Sibs birth	**Child's School Behavior Traits**	163 Frequency,PED rating 3
30 Child's peak attendance		164 Frequency,PED rating 4
	99 Care of body needs	165 Modal PED rating.
36 Family illness	100 Social graces	166 Score - PED rating 1
37 Family death	101 Peer cooperation	167 Score - PED rating 2
38 Caretaker for child	102 C's adult cooperation	168 Score - PED rating 3
65 Mother's play/verbal inter.	103 Honest	169 Score - PED rating 4
66 Father's play/verbal inter.	104 Accepts criticism	170 Total PED score
67 Older sister's play/verbal inter	105 Well organized	
68 Older brother's " " inter.	106 Cheerful	
69 Younger sib's play/verbal inter.	107 Affectionate	
70 Grandparent's play/verbal inter.	108 Spontaneous	
71 Other's play/verbal inter.	109 Accepts frustration	
72 Mother's reading to child	110 Ideas lang. exp.	
73 Father's reading to child	111 Fantasy play	
74 Older bros. " " "	112 Creative	
75 Older sis. " " "	113 Will new activity	
76 Grandparents " " "	114 Careful	
77 Others reading to child	115 Completes tasks	
78 Child init. verb.inter or play	116 Attention and concentration	
79 Child init. reading		
80 Child plays alone,VISM toys	**Scores**	
81 Child reads alone, VISM books	131 Mo's depr.mood index	
82 MCHP helped init. school		